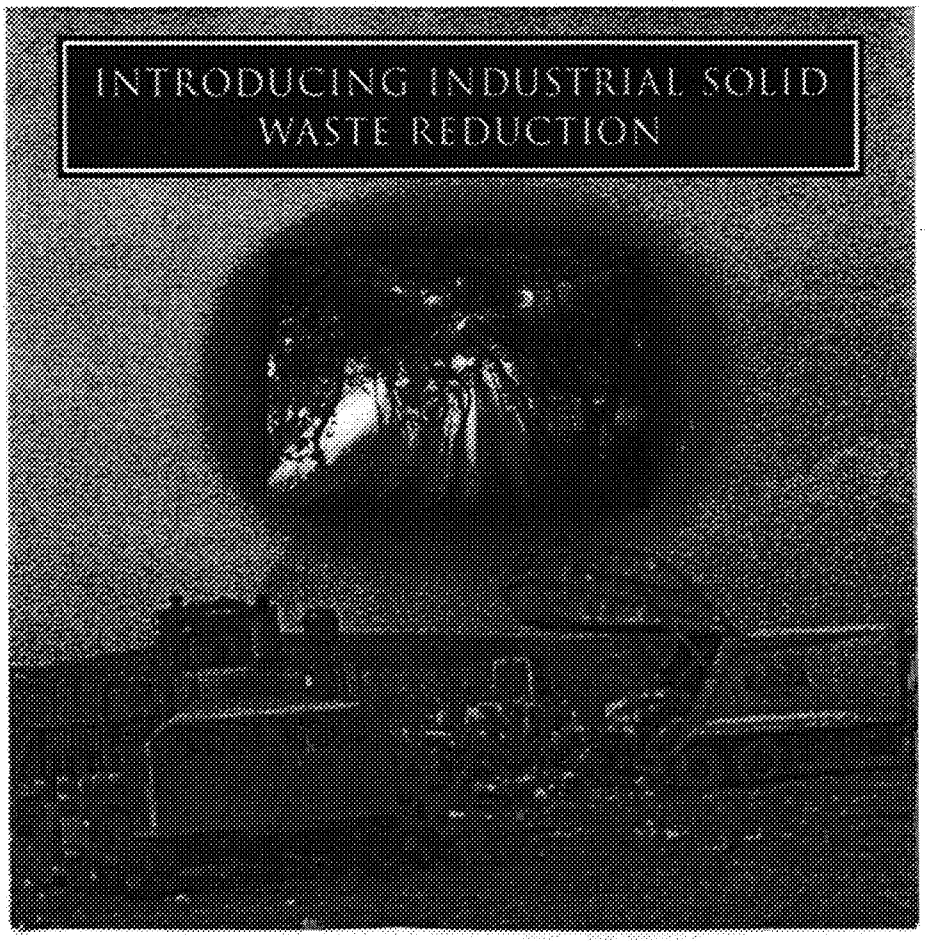
INTRODUCING INDUSTRIAL SOLID WASTE REDUCTION


INTRODUCING
INDUSTRIAL
SOLID WASTE REDUCTION
To run the program, do one of the following:
Windows 3.x
Insert into CD Rom drive.
Click File/Run.
Run dialog appears.
Enter your CD drive letter and KPPC16.
Example: D:\KPPC16
Click OK.
Windows 95
Insert into CD Rom drive.
Click Start/Run.
Run dialog appears.
Enter your CD drive letter and KPPC32.
Example: D:\KPPC32
Click OK.
PRODUCED BY
KENTUCKY POLLUTION PREVENTION CENTER (KPPC) AT THE UNIVERSITY OF LOUISVILLE

Facility Walk-Through

Date and Time of Walk-Through	Department
Department Manager	Telephone Number
Team Members Conducting Walk-Through	
Employees Interviewed	

1 Waste Components

Waste-Producing Activity or Equipment	Waste Material Produced	Estimated Amount of Waste Produced per Year	Current Wast Reduction Activities (if any)

1 Waste Components *(Continued)*

Waste-Producing Activity or Equipment	**Waste Material Produced**	**Estimated Amount of Waste Produced per Year**	**Current Wast Reduction Activities** (if any)

Facility Walk-Through

1 Target Materials for Waste Reduction

Based on the facility walk-through, list all materials that could be targeted by your waste reduction program. For each waste type, list all potential waste prevention, recycling, and/or composting methods that could be effective. Although recycling and composting are preferred ways of *managing* wastes, you may want to consider *preventing* the waste in the first place.

Waste Type	Potential Waste Reduction Activities

Waste Composition Data Sheet

Waste Type		% of Total	x Total Waste	Yard³ per Week	Conversion Factor	Total Wt. per Week	Source and Description
Cardboard	Cardboard (OCC)						
	Gaylords						
Filters	Filter Cake						
	Oil / Other						
	Paint						
	Other						
	Food Waste						
Glass	Container - Brown						
	Container - Clear						
	Container - Green						
	Laminated						
	Paint						
	Other						
Metals	Aluminum						
	Brass						
	Copper						
	Ferrous						
	Other						
Paper	General Office Paper						
	Computer - White						
	Computer - Green Bar						
	Newsprint						
	Other						
Plastic	1 - PET						
	2 - HDPE						
	3 - PVC						
	4 - LDPE						
	5 - PP						
	6 - PS						
	7 - Other						
	Stretch Wrap						
	Other						

Waste Composition Data Sheet

Waste Type		% of Total	x Total Waste	Yard³ per Week	Conversion Factor	Total Wt. per Week	Source and Description
Rubber	Cured						
	Uncured						
	Other						
Textile	Gloves						
	Rags						
	Other						
	Waste Oil						
Wood	Construction						
	Dunnage						
	Pallets						
	Other						
Yard Waste	Brush						
	Grass / Leaves						
	Other						
Other							

Types of Plastics and Their Codes

PET - Polyethylene Terephthalate
uses: soda bottles, food packaging film

HDPE - High Density Polyethylene
uses: milk jugs, some detergent containers

PVC - Polyvinyl Chloride
uses: food wrap, blister packs, cooking oil, bottles

LDPE - Low Density Polyethylene
uses: shrink wrap, garment bags, plastic bags

PP - Polypropylene
uses: deli, yogurt, cottage cheese containers, screw-on caps, long-life items

PS - Polystyrene
uses: food containers

Other
uses: some multi-resin containers

Waste Composition Data Sheet

General Information and Conversion Factors

Cans:	Aluminum, Whole Loose	1 yard = 70 lbs
	Aluminum, Flattened	1 yard = 1500 - 200 lbs
	Aluminum, Whole	1 full grocery bag = 1.5 lbs
	Aluminum, Whole	1 55 gallon bag = 13 - 20 lbs
	Steel, Whole	1 yard = 190 - 230 lbs
	Steel, Flattened	1 yard = 4000 - 5500 lbs
Cardboard:	Cardboard Boxes, Loose	1 yard = 40 - 50 lbs
	Cardboard Boxes, Loose Flattened	1 yard = 275 - 300 lbs
	Cardboard, Baled	1 yard = 550 - 850 lbs
Energy:	3415 BTU	1 kilowatt hour
	0.746 kilowatt	1 HP
	Used Tires	14,000 BTU per lb
	Low Grade Fuel Oil	130,000 BTU per gallon
	1 Gallon Oil	38 kilowatt hours
	Dry Hardwood	16,000,000 BTU per ton
	Dry Hardwood	4,685 kilowatt hours per ton
	Dry Hardwood	16,000 lbs steam (@212 F) per ton
	Burning 220 tons of Dry Hardwood	1 ton of ash
Food Wastes:	Garbage, Not Compacted	1 yard = 400 - 450 lbs
	Solid and Liquid Fats	1 55 gallon drum = 400 - 415 lbs
Glass:	Glass, Whole Bottles	1 full grocery bag = 16 lbs
	Glass, Whole Bottles	1 yard = 500 - 600 lbs
	Glass, Semi-Crushed	1 yard = 1000 - 1800 lbs
	Glass, Crushed	1 yard = 1800 - 2500 lbs
Paper:	Computer Paper, Loose	1 yard = 500 - 600 lbs
	Computer Paper, Compacted	1 yard = 1000 - 1200 lbs
	Bond Paper, Loose	1 yard = 400 - 500 lbs
	Bond Paper, Compacted	1 yard = 750 - 950 lbs
	Newspaper	12" stack = 35 lbs
	Newspaper, Loose	1 yard = 350 - 500 lbs
	Newspaper, Compacted	1 yard = 750 - 1000 lbs

Waste Composition Data Sheet

General Information and Conversion Factors

Plastic:	PET Bottles, Whole Loose	1 yard = 30 - 40 lbs
	PET Bottles, Whole Loose	1 Gaylord = 40 - 53 lbs
	PET Bottles, Baled	30"x48"x60" = 500 lbs
	PET Bottles, Granulated	1 Gaylord = 700 - 750 lbs
	PET Bottles, Granulated	1 truck-load = 44,000 lbs
	HDPE Bottles, Whole Loose	1 yard = 24 lbs
	HDPE Bottles, Baled	30"x48"x60" = 500 - 800 lbs
	HDPE Bottles, Granulated	1 Gaylord = 800 - 1000 lbs
	HDPE Bottles, Granulated	1 truck-load = 42,000 lbs
	Mixed PET & HDPE, Whole Loose	1 yard = 32 lbs
	Mixed Solid Granulated	1 yard = 1600 lbs
	Stretch Wrap Film, Baled	30"x42"x60" = 1100 lbs
Yard Wastes:	Leaves, Piled	1 yard = 250 - 300 lbs
	Leaves, Compacted	1 yard = 550 - 600 lbs
	Grass Clippings	1 yard = 400 - 450 lbs
	Wood Chips	1 yard = 500 - 525 lbs
Miscellaneous:	Passenger Car Tires	= 22 lbs each
	Truck Tires	= 60 lbs each
	Used Motor Oil	= 7 lbs per gallon

Waste Quantity Worksheet

A Container Location	**B** Number of Containers	**C** Name of Hauler	**D** Size in Cu. Yds.	**E** % Full When Pulled Formula: E x D	**F** Cu. Yds. Per Pull	**G** Pulls Per Week	**H** Cu. Yds. per Week Formula: F x G	**I** Lbs./Tons Per Week	**J** Lbs/Tons Per Week
						Total			

Pallet Estimates

	Example	Example								
Size	36 X 42	45 X 60								
Quantity	P20	D10								

NOTE: P = procuring, D = disposing of, and the number indicates monthly average.

Metal Waste Estimates

Material Description	Pounds per Month	Material Cost per Pound	Labor & Overhead	Cost per Month	Cost per Year
Aluminum					
Assemblies					
Brass					
Chromium					
Copper					
Iron & Steel					
Lead					
Scrap Parts					
Sub-Assemblies					
Zinc					
Other Items					

Cost of Baling Cardboard for Recycling

Amortization = Cost of Baler $ [ ] Divided by 5* =	$
Cost of Wire = $.85 X [ ] Bales per year =	$
Cost of Electricity = $1.00 X [ ] Bales per year =	$
Cost of Maintenance = .01 X $ [ ] Cost of Baler =	$
Labor Cost = .67 X $ [ ] per hour X [ ] Bales per year =	$
Total Annual Cost =	$

* Baler will last much longer than 5 years, this is just a convenient number.

Revenue From Sale of Cardboard

12 X [ ] tons per month X $ [ ] per ton = $ [ ] per year	
Annual Revenue From Sale of Cardboard	$
Plus Annual Savings in Disposal Cost	$
Total	$
Minus Cost of Baling Cardboard	$
Net Savings or <LOSS>	$

True Costs Worksheet

Material From Waste Compostion Data Sheet.	Percent From Waste Composition Data Sheet	x	Yearly Total From Disposal Costs Worksheet	=	Disposal Cost	+	Associated Costs	=	True Yearly Costs of Waste
		x		=		+		=	
		x		=		+		=	
		x		=		+		=	
		x		=		+		=	
		x		=		+		=	
		x		=		+		=	
		x		=		+		=	

Associated Costs Worksheet

Raw Material Costs	
Labor Costs	
Utility Costs	
Equipment	

Disposal Costs Worksheet

A Container Location	**B** Rental Fee Per Week Monthly fee/4.33	**C** Cu. Yds. Per Week From Waste Quantity Worksheet	**D** Conversion Factor 4 cu. yds./ ton*	**E** Tipping Fee	**F** Pulls Per Week	**G** Pull Fee	**H** Container Cost Subtotal B + ((C / D) * E) + (F * G)

Total Weekly Disposal Costs		**X**
Production Weeks		
Total Yearly Disposal Costs		**=**

*4 cu. yds. per ton is an acceptable conversion factor for Municipal Solid Waste. Adjust your conversion factor to reflect heavier or lighter material.